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ASSOSIATION OF THIAMINE WITH CREATININE AND MICROALBUMINURIA IN TYPE 2 DIABETIC SUDANESE SUBJECTS

A thesis submitted in partial fulfilment of the requirements for the degree of Master in Biochemistry.

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Dedication

To my father, my teacher and my inspiration forever.
To my mother, whom illuminate my life by her prayers.
To my siblings and friends, where my strength, love and support lie.

Acknowledgment

I would like to thank my thesis advisor Dr. Fatima Alsammani Alsheikh. The door of her was always open whenever I ran into a trouble spot or had a question about my research or writing she consistently allowed this paper to be my own work, but steered me in the right direction whenever she thought I needed it.
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Finally, I am very much thankful to all the participants of this study.

Abbreviation

Term	Abbreviation
DM	Diabetes Mellitus
OGTT	Oral glucose tolerance test
HbA1C	Glycated hemoglobin
T1D	Type 1 diabetes mellitus
IDDM	Insulin-dependent diabetes mellitus
MS	Multiple sclerosis
T2DM	Type 2 diabetes mellitus
HDL	High - density lipoprotein
GDM	Gestational diabetes mellitus
IFG	Impaired fasting glucose
IGT	Impaired glucose tolerance
DKA	Diabetic ketoacidosis
CVD	Cardiovascular disease
GFR	Glomerular filtration rate
PCT	Proximal convoluted tubule
eGFR	Estimated glomerular filtration rates
SPSS	Statistical package for social sciences
CPB-RP	Horse reddish peroxidase
Conc Std	Concentration of standard
WHO	World Health Organization
MS	multiple sclerosis

ABSTRACT

Diabetes mellitus (DM) is a major public health problem in Sudan. The aim of this study is to determine the changes, which happen in blood vitamins level specifically Thiamine (vitamin B1), as a result of renal functions complications among diabetic patients.

The study was carried out in Ribat university hospital, in Khartoum state, Sudan, Cross-sectional study .

The objective of this study is to correlate the creatinine and microalbuminuria with the blood thiamine and duration in diabetic Sudanese subjects.

Fifty patients with type 2 diabetes mellitus were included (24 males and 26 females) Their ages range 40 years and above .twenty matched normal individual were taken as control group .

The mean level of thiamine in diabetic patients male and female was (8.2±0.78, 11.8±0.93) mg/dl respectively, was significantly lower compared to the control group.

The mean of creatinine in diabetic type 2 patients male and female (1.8±0.6, 1.1±0.2) mg/dl respectively. Microalbuminuria in diabetic type 2, male and female (44.8±4.13, 55.6±3.11) mg/dl, were significantly higher compared to the control groups.

Results showed significant increase ($P<0.05$) of microalbuminuria and creatinine and decrease of thiamine in type 2 diabetic female and male compared to the control group .

المستخلص:

يعتبر داء السكر احد اهم مشاكل الصحه الشائعه في جمهورية السودانز تهدف هذه الدراسه الى تحديد التغييرات في مستوى الفيتامينات الموجوده في الدم و فيتامين ب1 (الثيامين) على وجه التحديد, و التي تدث نتيجة مضاعفات وظائف الكلى لدى المصابين بداء السكر .

اجريت هذه الدراسه في مستشفى الرباط الجامعي الواقعه بولاية الخرطوم في السودان , و هي دراسه مبنيه على دراسة الحلات العرضيه.

الهدف هو ربط الكيرياتينين و المايكروالبيومينيوريا مع الثيامين في الدم مع وضع مدة الاصابه بداء السكر في الاعتبار و ذلك لدى اشخاص سودانيين مصابين بداء السكر.

تضمنت هذه الدراسه 50 فرد مصاب بداء السكر من النوع الثاني (24 ذكر و 26 انثى) تتراوح اعمارهم من 40 عاما فما فوق , بالاضافه الى 20 شخص سليم (باعتبارهم مجموعة المقارنه).

متوسط نسبة الثيامين في الدم لدى المصابين بداء السكر من النوع الثاني الذكور و الاناث $11.8,0.7\pm8.2$ ±0.93

و يعتبر هذا انخفاضا ملحوظا لدى المصابين بقارنة بمجموعة المقارنه السليمه.

متوسط نسبة الكيرياتينين في الدم لدى المصابين بداء السكر من النوع الثاني الذكور و الاناث 1.8 ± 0.6 , 1.1 ± 0.2

اما متوسط نسبة المايكروالبومينيوريا لدى المصابين الذكور و الاناث فهي 55.6 ± 3.11 , 44.8 ± 4.13

و يعتبر هذا ارتفاعا ملحوظا لدى جميع المصابين مقارنة بمجموعة المقارنه السليمه .

اظهرت النتائج ارتفاعات ملحوظه في المايكروالبيومينيوريا و الكيرياتينين و انخفاض في الثيامين لدى المصابين بداء السكر من النوع الثاني مقارنة بمجموعة المقارنه السليمه.

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